CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2012-XXXX
ATTACHMENT B TO ORDER R5-2012-XXXX
MONITORING AND REPORTING PROGRAM

WASTE DISCHARGE REQUIREMENTS GENERAL ORDER
FOR
MEMBERS OF A THIRD-PARTY GROUP WITHIN THE TULARE LAKE BASIN, EXCLUDING THE AREA OF THE WESTLANDS STORMWATER COALITION

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I. Introduction

This Monitoring and Reporting Program (MRP) is issued pursuant to the California Water Code (Water Code) section 13267 which authorizes the California Regional Water Quality Control Board, Central Valley Region (hereafter Central Valley Water Board), to require preparation and submittal of technical and monitoring reports. This MRP includes requirements for a third-party representative entity assisting individual irrigated lands owners/operators that are members of the third-party (Members), as well as requirements for individual Members subject to and enrolled under Waste Discharge Requirements General Order for Members of a Third-Party Group within the Tulare Lake Basin, excluding the area of the Westlands Stormwater Coalition (hereafter "Tulare Lake Basin Area") Order R5-2013-XXXX (hereafter referred to as the "Order"). The requirements of this MRP are necessary to monitor Member compliance with the conditions of the Order and determine whether state waters receiving discharges from Members are meeting water quality objectives. Additional discussion and rationale for this MRP's requirements are provided in Attachment A of the Order.

This MRP establishes specific surface and ground water monitoring, reporting, and electronic data deliverable requirements for the third-party. Due to the nature of irrigated agricultural operations, monitoring requirements for surface waters and groundwater will be periodically reassessed to determine if changes should be made to better represent irrigated agriculture discharges to state waters. The monitoring schedule will also be reassessed so that constituents are monitored during application and/or release timeframes when constituents of concern are most likely to affect water quality. The third-party shall not implement any changes to this MRP unless the Central Valley Water Board or the Executive Officer issues a revised MRP.

II. General Provisions

This Monitoring and Reporting Program (MRP) conforms to the goals of the Non-point Source (NPS) Program as outlined in *The Plan for California's Nonpoint Source Pollution (NSP) Program* by:

- tracking, monitoring, assessing and reporting program activities,
- ensuring consistent and accurate reporting of monitoring activities,
- targeting NPS Program activities at the watershed level,
- coordinating with public and private partners, and
- tracking implementation of management practices to improve water quality and protect existing beneficial uses.

Monitoring data collected to meet the requirements of the Order must be collected and analyzed in a manner that assures the quality of the data. The third-party must follow sampling and analytical procedures as specified in Attachment C, Order No. R5-2008-0005, Coalition Group Monitoring Program Quality Assurance Project Plan Guidelines (QAPP Guidelines) and any revisions thereto approved by the Executive Officer.[1]

To the extent feasible, all technical reports required by this MRP must be submitted electronically in a format specified by the Central Valley Water Board that is reasonably available to the third-party.

This MRP Order becomes effective on DATE. The Central Valley Water Board Executive Officer may revise this MRP as necessary. Upon the effective date of this MRP, the third-party, on behalf of the individual Members, shall implement the following monitoring and reporting.

[1] Central Valley Water Board staff will circulate proposed revisions of the QAPP Guidelines for public review and comment prior to Executive Officer consideration for approval.

III. Surface Water Quality Monitoring Requirements

A. Surface Water Assessment Report

The third-party will analyze readily available surface water monitoring data for the area within its boundaries to provide baseline information and determine if deficiencies exist in monitoring for discharges from irrigated agricultural fields. Analysis of this monitoring data including applicability and quality will be reported in the Surface Water Assessment Report due one year after the effective date of this MRP and updated every five (5) years thereafter. Updated Surface Water Assessment Reports will be provided to the Central Valley Water Board as part of the third-party's Annual Monitoring Report (AMR). The Surface Water Assessment Report shall include, at a minimum, the following elements.

1. A summary and technical review of readily available surface water monitoring data within water bodies potentially impacted by waste discharges from irrigated agriculture. Applicable sources include, but are not limited to; Central Valley Water Board and State Water Board data (ILRP, Surface Water Ambient Monitoring Program [SWAMP], Total Maximum Daily Load [TMDL]), California Department of Pesticide Regulations (DPR) data, the United States Geological Survey's (USGS) National Water Quality Assessment Program (NAWQA), USGS California Water Science Center (CAWSC) data, and local watershed group information.
2. Identification of potential waste discharge pathways leaving a farm, applicable wastes (e.g., pesticide use), and temporal consideration of discharge.
3. Data trends analysis utilizing the full irrigated lands program data set for the third-party group area. The purpose of the trends analysis is to identify long-term temporal or spatial changes in the effects of irrigated agriculture on water quality.
4. Identification of data gaps (types and locations) that exist for surface water within the third-party group's boundaries.

B. Surface Water Monitoring Plan

The Surface Water Monitoring Plan must provide sufficient data to describe irrigated agriculture's impacts on surface water quality and to determine whether existing or newly implemented management practices comply with the Surface Water Limitations of the Order. Surface water monitoring shall include a comprehensive suite of constituents (also referred to as "parameters") monitored periodically in a manner that allows for an evaluation of the condition of a water body and determination of whether irrigated agriculture operations in the Tulare Lake Service Area are causing or contributing to an exceedance of an applicable water quality objective, unreasonably affecting applicable beneficial uses, or causing a condition of pollution or nuisance.

Utilizing the information presented in the Surface Water Assessment Report, the third-party group shall design a scientifically and technically justifiable Surface Water Monitoring Plan sufficient to characterize water quality for all waters of the state within the third-party group's boundaries. The Surface Water Monitoring Plan shall:

- Provide a discussion of the scientific rationale used for the monitoring site selection process (e.g., based on historical and/or on-going monitoring, drainage size, crop types and distribution, topography and land use);
- Provide a discussion and schedule for addressing data gaps identified in the Surface Water Assessment Report;
- Discuss the specific conditions/rationale used for the selection of each proposed monitoring site and include the proposed site's location (Albers Projection, NAD83, and units in meters);
- Identify priorities with respect to work on specific watersheds, sub-watersheds, and water quality parameters;

- Identify the method(s) to be used to demonstrate the effectiveness of current management practices and the processes to be used for implementing new management practices, if necessary to achieve compliance with the Surface Water Limitations of the Order; and
- Include the requirements provided in Parts I through III of this MRP Order.

The Surface Water Monitoring Plan shall utilize five different but interrelated types of surface water monitoring sites: 1) fixed, long-term core sites, 2) assessment sites, 3) ephemeral sites, 4) special project sites, and 5) representative sites (site types are described in detail below).

1. Core Monitoring

Core monitoring sites will be used to track trends in water conditions over time. Core monitoring shall occur at fixed stations, at probabilistic sites, or at some other combination of sites that typically contain surface water during some portion of time each year (perennial or intermittent waterway). Core monitoring sites will be sampled on a regular basis (see section III. B. 1.), and must include a repetition of the Assessment Monitoring analytical parameters on a regular basis. The purpose of periodically repeating the Assessment Monitoring analytical regime is to evaluate the effects of changes in land-use and management practices and provide information about long-term trends and effectiveness of the management practices. Core monitoring shall not be limited to largest volume water bodies that would dilute waste constituents that may be in higher concentrations in tributary streams and drainages.

The Core Monitoring component of the surface water monitoring plan shall:

- Focus on a diversity of monitoring sites across the Coalition Group's area (hydrology, size, and flow);
- Include sites that through Assessment Monitoring or other information have been shown to be characteristic of key crop types, topography, and hydrology within the third-party group's boundaries;
- Discuss the criteria for the selection of each monitoring site (based on the Surface Water Assessment Report, existing monitoring projects, or historical information);
- Propose the approach, including a schedule, to sample core monitoring sites;
- Include water bodies that carry agricultural drainage, are dominated by agricultural drainage, or otherwise could be affected by other irrigated agriculture activities; and
- Include management practice information in order to establish relationships (status and trends) with water quality monitoring information.

Core monitoring sites shall be chosen from locations where monitoring has already been conducted, or at other sites demonstrated to be appropriate for long-term trend monitoring, and that have been adequately characterized. It is anticipated that the majority of core monitoring sites will be chosen from the third-party's existing monitoring sites allowing for a continuous or near continuous database from which trends may be evaluated.

2. Assessment Monitoring

Assessment monitoring sites shall be selected to represent varying sizes and flows of surface water bodies (including perennial and intermittent waterways) and land uses (e.g., agricultural activities, crops and pesticide use), focusing on diversity across the watershed, and must include water bodies that are carrying agricultural drainage into natural water bodies, whether directly or indirectly. Assessment monitoring will be conducted on a rotating basis (see section III. B. 2.). Rotation will be continuous so that any given water body will be reassessed on a regular basis. This strategy will allow for the characterization of a large number of water bodies throughout the third-party area over time.

Assessment monitoring shall:

- Focus on a diversity of monitoring sites across the third-party group's area (hydrology, size, and flow);
- Evaluate different types of water bodies for assessment (perennial, intermittent, constructed agricultural conveyance structures [excluding on-farm conveyance structures] and ephemeral waterways);
- Include a sufficient number of sampling sites or representative monitoring sites (defined in number 4 below) to assess all surface waters of the state within the third-party group area; and
- Include sampling sites in areas of known water quality impairments, even if they are not currently identified on the Clean Water Act (CWA) 303(d) listing.

Assessment monitoring shall be used to provide supporting data for sites that a third-party group wishes to select as Core monitoring sites for trends. Assessment monitoring shall also take place at all newly established monitoring sites or at sites that have not been fully characterized. Any watershed drainage area that does not contain a Core site or Assessment site must have a designated representative monitoring site unless the Executive Officer has approved an exemption. Any surface water quality management plan (SQMP) actions required by the representative site must take place in the represented drainages.

Assessment monitoring may include coordinated monitoring with other programs. All coordinated monitoring data will need to be identified and discussed in the third-party group-specific MRP Plan, and data must be submitted with the third-party group's annual monitoring reports

3. Ephemeral Monitoring

Ephemeral monitoring sites shall be established on representative ephemeral streams (a stream channel which carries water only during and immediately after periods of rainfall or snow melt) which may be impacted by agricultural operations (e.g., spray drift, tailwater flows, storm water runoff). Because ephemeral waterways do not typically have a municipal and/or domestic water supply beneficial use (to be determined on an individual waterway basis), and they are typically dry for extended periods of time (in some cases for multiple years) they are to be monitored for all of the parameters listed in section III.C.3.

4. Special Project Monitoring

In addition to Core and Assessment sites, the third-party may designate Special Project Monitoring sites as needed in a SQMP to evaluate commodity or management practice-specific effects on identified water quality problems,[2] or to evaluate sources of identified water quality problems.

In accordance with Water Code section 13267, the Executive Officer may require the third-party to conduct local or site-specific monitoring, in addition to the Core and Assessment monitoring, where monitoring identifies a localized water quality problem. Core sites and Assessment sites located in areas where management plans are required will also be considered Special Project sites

5. Representative Monitoring

The third-party's monitoring strategy may rely on representative monitoring to characterize surface water quality conditions for Assessment and Ephemeral monitoring sites within in its region. The Surface Water Monitoring Plan must specify which waterways or watershed areas are to be represented by the representative monitoring sites and provide a technically sound justification for the representative nature of the monitoring locations including: similarities in hydrology, crop types, pesticide use, and other factors that affect the discharge of wastes from irrigated lands to surface

[2] "Water quality problem" is defined in Attachment E.

waters. Third-party Members within watershed areas that are represented by monitoring in another watershed must apply all SQMP requirements, if any, associated with the representative monitoring site

C. Monitoring Requirements

Surface water monitoring shall be conducted at accessible sites and shall consist of the general water quality parameters, nutrients, pathogen indicators, water column and sediment toxicity, pesticides, and metals identified in section III.C.3. Sampling events shall be scheduled to attempt to capture at least two storm runoff events per year, except where a different frequency has been required or approved by the Executive Officer. As described in section III.C.3, the third-party shall identify a specific set of monitoring parameters (Monitoring Parameter Report) for each site that is scheduled to be monitored by 1 August of the calendar year in which monitoring begins (see additional discussion below under section III.C.3). A monitoring year is defined according to water year, which is 1 October through 30 September.

Follow-up sampling: The Central Valley Water Board Executive Officer may request that a parameter(s) of concern continue to be monitored at a specific Core or rotating Assessment site during non-scheduled years. Parameters of concern may include, but are not limited to, parameters that exceed an adopted water quality objective or water quality trigger (see section VII).

1. Monitoring Schedule

Core monitoring – Core Monitoring is to be conducted on a repeating five-year cycle (two consecutive years of Assessment monitoring parameters followed by three consecutive years of sampling for Core monitoring parameters followed by a repeat of the cycle [see Table 1 below]).

TABLE I
CORE MONITORING CYCLE*

Monitoring Type	Year 1	Year 2	Year 3	Year 4	Year 5
Assessment	X	X			
Core			X[1]	X[1]	X

*Repeat cycle every five years

X[1]- the first two years of core monitoring will include assessment monitoring parameters that exceeded a water quality objective in the previous assessment period.

Assessment monitoring – Assessment monitoring shall be conducted for a period of two consecutive years at all new sites and then repeated on a regular rotating basis; the period of rotation to be proposed in the third-party's Surface Water Monitoring Plan.

Ephemeral monitoring - Due to the transitory nature of surface water flow within an ephemeral stream, sampling shall be conducted once monthly whenever water is present. Rainfall forecasts shall be utilized to identify potential sampling events and to provide advanced notice to sampling and laboratory personnel for preparation purposes. Specific Ephemeral sampling triggers and procedures shall be developed by the third-party and included in the third-party's Surface Water Monitoring Plan

2. Monitoring Frequency

The third-party shall identify the appropriate monitoring periods (e.g., months, seasons) for all parameters that require testing (Table 2), including a discussion of the rationale to support the proposed schedule.

For metals, pesticides, and aquatic toxicity, the monitoring periods shall be determined utilizing previous monitoring results, knowledge of agricultural use patterns (if applicable), pesticide use trends, chemical characteristics, and other applicable criteria. All other required parameters shall be monitored according to an approved schedule and frequency during the years in which monitoring is conducted at the Core and Represented sites.

Monitoring must be conducted when the pollutant is most likely to be present. If there is a temporal or seasonal component to the beneficial use, monitoring must also be conducted when beneficial use impacts could occur. The frequency of data collection must be sufficient to allow determination of compliance with the relevant numeric water quality objective(s) or water quality triggers. The third-party may submit written requests for the removal or addition of monitoring sites or parameters, or to modify the monitoring schedule and frequency, for approval by the Executive Officer.

3. Monitoring Parameters

Water quality and flow monitoring shall be used to assess the wastes in discharges from irrigated lands to surface waters and to evaluate the effectiveness of management practice implementation. Water quality is evaluated with both field-measured parameters and laboratory analytical data as listed on Table 2 of this MRP. The pesticides identified as "to be determined" (TBD) on Table 2 shall be identified according to a process developed by the Central Valley Water Board staff that includes stakeholder input and coordination with the Department of Pesticide Regulation. Based on this process, the Executive Officer will provide the third-party with a list of pesticides that require monitoring in areas where they are applied and have the potential to impair water quality. The third party shall monitor pesticides as appropriate to the region and commodities grown.

The metals to be monitored at sites within each site sub-watershed shall be determined through an evaluation of several factors. The evaluation will provide the basis for including or excluding each metal. Evaluation factors shall include, but not be limited to: documented use of the metal applied to lands for irrigated agricultural purposes in the last three years; prior monitoring results; geological or hydrological conditions; and mobilization or concentration by irrigated agricultural operations. The third-party may also consider other factors such as acute and chronic toxicity thresholds and chemical characteristics of the metals. The third-party shall evaluate the monitoring parameters listed in Table 2 to determine which metals warrant monitoring for each site sub-watershed. Documentation of the evaluations must be provided to the Central Valley Water Board as part of the Monitoring Plan Update.

The third-party shall identify in the Monitoring Plan Update all parameters to be monitored and the proposed monitoring periods and frequency at selected sites by 1 August of the year in which monitoring begins (monitoring period begins 1 October). If there are no changes from the previous Executive Officer approved monitoring (i.e., approved MRPP, or previously approved Monitoring Plan Update), the third-party is not required to submit the Monitoring Plan Update. The Monitoring Plan Update shall be subject to Executive Officer review and approval prior to the initiation of changes in monitoring activities.

Table 2: Monitoring Parameters

	Measured Parameter	Matrix	Required
Field Measurements	Estimated Flow (cfs)	Water	x
	Photo Documentation	Site	x
	Conductivity (at 25 ºC) (µs/cm)	Water	x

Table 2: Monitoring Parameters

	Measured Parameter	Matrix	Required
	Temperature (ºC)	Water	x
	pH	Water	x
	Dissolved Oxygen (mg/L)	Water	x
Drinking Water	E. Coli	Water	x
	Total Organic Carbon (TOC)	Water	x
Gen Phys	Hardness (as $CaCO_3$)	Water	TBD
	Total Suspended Solids (TSS)	Water	x
	Turbidity	Water	x
Metals	Arsenic (total)	Water	TBD
	Boron (total)	Water	TBD
	Cadmium (total and dissolved)**	Water	TBD
	Copper (total and dissolved)**	Water	TBD
	Lead (total and dissolved)**	Water	TBD
	Molybdenum (total)	Water	TBD
	Nickel (total and dissolved)**	Water	TBD
	Selenium (total)	Water	TBD
	Zinc (total and dissolved)**	Water	TBD
	Measured Parameter	**Matrix**	**Required**
Nutrients	Total Ammonia (as N)	Water	x
	Unionized Ammonia (calc value)	Water	x
	Nitrogen, Nitrate+Nitrite	Water	x
	Soluble Orthophosphate	Water	x
Pesticides	Registered pesticides determined according to the process identified in section III.C.3.	Water	TBD
303(d)	TMDL constituents required by the Basin Plan 303(d) listed constituents to be monitored if irrigated agriculture is identified as a contributing source within the Tulare Lake Basin Area and requested by the Executive Officer.	Water or Sediment	TBD

Table 2: Monitoring Parameters

	Measured Parameter	Matrix	Required
Water Toxicity	Ceriodaphnia dubia	Water	x
	Pimephales promelas	Water	x
	Selenastrum capricornutum	Water	x
	Toxicity Identification Evaluation	Water	see section III.C.4
Sediment Toxicity	Hyalella azteca	Sediment	x
Pesticides & Sediment Parameters	Bifenthrin	Sediment	As needed*
	Cyfluthrin	Sediment	As needed*
	Cypermethrin	Sediment	As needed*
	Deltamethrin	Sediment	As needed*
	Esfenvalerate/Fenvalerate	Sediment	As needed*
	Fenpropathrin	Sediment	As needed*
	Lambda cyhalothrin	Sediment	As needed*
	Permethrin	Sediment	As needed*
	Piperonyl butoxide (PBO)	Sediment	As needed*
	Chlorpyrifos	Sediment	As needed*
	Total Organic Carbon	Sediment	x
	Grain Size	Sediment	x

* For sediment samples measuring significant toxicity and ≥20% reduction in organism survival compared to the control, the sediment pesticide analysis will be performed. Sediment pesticide analyses may be identified according to an evaluation of PUR data (see sediment toxicity testing requirements in section III.C.4 below).
** Hardness samples shall be collected when sampling for these metals.

4. Toxicity Testing

The purpose of toxicity testing is to: 1) evaluate compliance with the Basin Plan narrative toxicity water quality objective; 2) identify the causes of toxicity when and where it is observed (e.g. metals, pesticides, ammonia, etc.); and 3) evaluate any additive toxicity or synergistic effects due to the presence of multiple constituents.

a. Aquatic Toxicity

Aquatic toxicity testing shall include *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornutum* in the water column and shall follow the USEPA testing methods.[3,4] Toxicity test endpoints are survival for *C. dubia* and *P. promelas*, and growth for *S. capricornutum*.

Water column toxicity analyses shall be conducted on 100% (undiluted) sample for the initial screening. A sufficient sample volume shall be collected in order to allow the laboratory to conduct a Phase I Toxicity Identification Evaluation (TIE) on the same sample, should toxicity be detected, in an effort to identify the cause of the toxicity.

[3] USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. Office of Water, Washington, D.C. USEPA-821-R-02-012.
[4] USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. Office of Water, Washington, D.C. USEPA-821-R-02-013.

If a 50% or greater difference in *Ceriodaphnia dubia* or *Pimephales promelas* mortality in an ambient sample, as compared to the laboratory control, is detected at any time in an acceptable test, a TIE shall be initiated within 48 hours of such detection. If a 50% or greater reduction in *Selenastrum capricornutum* growth in an ambient sample, as compared to the laboratory control, is detected at the end of an acceptable test, a TIE shall be initiated within 48 hours of such detection.

At a minimum, Phase I TIE[5] manipulations shall be conducted to determine the general class(es) (e.g., metals, non-polar organics, and polar organics) of the chemical(s) causing toxicity. The laboratory report of TIE results submitted to the Central Valley Water Board must include a detailed description of the specific TIE manipulations that were utilized.

If within the first 96 hours of the initial toxicity screening, the mortality reaches 100%, a multiple dilution test shall be initiated. The dilution series must be initiated within 24 hours of the sample reaching 100% mortality, and must include a minimum of five (5) sample dilutions in order to quantify the magnitude of the toxic response. For the fathead minnow test, the laboratory must take the steps to procure test species within one working day, and the multiple dilution tests must be initiated the day fish are available.

Ceriodaphnia dubia and Pimephales promelas Media Renewal

Daily sample water renewals shall occur during all acute toxicity tests to minimize the effects of rapid pesticide losses from test waters. A feeding regime of 2 hours prior to test initiation and 2 hours prior to test renewal shall be applied. Test solution renewal must be 100% renewal for *Ceriodaphnia dubia* by transferring organisms by pipet into fresh solutions, as defined in the freshwater toxicity testing manual.

Selanastrum capricornutum Pre-Test Treatment

Algae toxicity testing shall not be preceded with treatment of the chelating agent EDTA. The purpose of omitting this agent is to ensure that metals used to control algae in the field are not removed from sample aliquots prior to analysis or during the initial screening.

b. Sediment Toxicity

Sediment toxicity analyses shall be conducted according to EPA Method 600/R-99/064. Sampling and analysis for sediment toxicity testing utilizing *Hyalella azteca* shall be conducted at each monitoring location established by the third-party for water quality monitoring, if appropriate sediment (i.e. silt, clay) is present at the site. If appropriate sediment is not present at the designated water quality monitoring site, an alternative site with appropriate sediment shall be designated for all sediment collection and toxicity testing events. Sediment samples shall be collected and analyzed for toxicity twice per year, with one sample collected between 15 August and 15 October, and one sample collected between 1 March and 30 April, during each year of monitoring. The *Hyalella azteca* sediment toxicity test endpoint is survival. The Executive Officer may request different sediment sample collection timing and frequency under a SQMP.

All sediment samples must be analyzed for total organic carbon (TOC) and grain size. Analysis for TOC is necessary to evaluate the expected magnitude of toxicity to the test species. Note that sediment collected for grain size analysis shall not be frozen. If the sample is not toxic to the test species, the additional sample volume can be discarded.

Sediment samples that show significant toxicity to *Hyalella azteca* at the end of an acceptable test and that exhibit ≥ 20% reduction in organism survival compared to the control will require

[5] USEPA. 1991. Methods for Aquatic Toxicity Identification Evaluations. Phase I Toxicity Characterization Procedures. Office of Research and Development, Washington DC. 20460. EPA-600-6-91-003.

pesticide analysis of the same sample in an effort to determine the potential cause of toxicity. The third-party may use the previous three years of available PUR data to determine which of the parameters listed in Table 2 require testing in the sediment sample. Analysis at practical reporting limits of 1 ng/g on a dry weight basis for each pesticide is required to allow comparison to established lethal concentrations of these chemicals to the test species. This follow-up analysis must begin within five business days of when the toxicity criterion described above is exceeded. The third-party may also follow up with a sediment TIE when there is ≥ 50% reduction in test organism survival as compared to the laboratory control. Sediment TIEs are an optional tool.

5. Special Project Monitoring

The Central Valley Water Board or Executive Officer may require the third-party to conduct local or site-specific monitoring where monitoring identifies a water quality problem (Special Project Monitoring). The studies shall be representative of the effects of changes in management practices for the parameters of concern. Once Special Project Monitoring is required, the third-party must submit a Special Project Monitoring proposal. The proposal must provide the justification for the proposed study design, specifically identifying how the study design will quantify irrigated agriculture's contribution to the water quality problem, identify sources, and evaluate management practice effectiveness. When such a study is required, the proposed study must include an evaluation of the feasibility of conducting commodity and management practice specific field studies for those commodities and irrigated agricultural practices that could be associated with the pollutants of concern. Special Project Monitoring studies will be designed to evaluate the effectiveness of practices used by multiple Members and will not be required of the third-party to evaluate compliance of an individual Member.

D. Surface Water Data Management Requirements

All surface water field and laboratory data must be uploaded into the Central Valley Regional Data Center (CV RDC) database and will be exported to the California Environmental Data Exchange Network (CEDEN) once data have been approved as CEDEN comparable. The third-party will input its data into a replica of the CV RDC database following CV RDC and CEDEN business and formatting rules.

The third-party shall utilize the most current version of the database and update associated lookup lists on a routine basis. The third-party shall ensure that the data loaded meet the formatting and business rules as detailed in the most current version of the document "Format and Business Rules for the CV RDC CEDEN Comparable Database."

The Central Valley Water Board has developed several tools to assist the third-party with processing and loading of its data. These tools, whether required or optional, will help the third-party to efficiently conduct data processing and loading and meet data management requirements.

<u>CEDEN Comparable Field Sheets (Required)</u>

The third party shall use CEDEN comparable field sheets when entering data. An example CEDEN comparable field sheet can be found on the CV RDC webpage. This field sheet was designed to match the entry user interface within the CEDEN comparable database to allow for easier data entry of all sample collection information. Modified versions of the field sheet may be submitted to the Central Valley Water Board Executive Officer for approval.

<u>Format Quick Guide (Optional Tool)</u>

The Format Quick Guide is a guidance document for the formatting of data tailored specifically for the third-party. It contains a column by column guide for filling out the CV RDC data templates with the applicable required codes. The Central Valley Water Board CV RDC will provide this document, and updates to it, upon request based on an approved monitoring plan and associated QAPP.

EDD Checklist (Optional Tool)

The electronic data deliverable (EDD) checklist provides for a structured method for reviewing data deliverables from data entry staff or laboratories prior to loading. An updated checklist will be made available on the CV RDC website.

Online Data Checker (Optional Tool)

An online data checker was developed to automate the checking of the datasets against the current format requirements and business rules associated with CEDEN comparable data. The data checker can be accessed on the CV RDC webpage. Please note that data submission will not be accepted through this tool; however, the checker can still be used to check data for errors.

Electronic Quality Assurance Program Plan (eQAPP) (Required)

The third-party shall use an eQAPP when collecting and analyzing monitoring data. The eQAPP is a spreadsheet document containing the quality control requirements for each analyte and method as detailed in the most current version of the third-party's approved QAPP. Each analyte, method, extraction, units, recovery limits, QA sample requirement, etc. is included in this document using the appropriate codes required for the CEDEN comparable database. The third party shall use the document to format the reported data and conduct a quality control review prior to loading. Data that do not meet the project quality assurance acceptance requirements must be flagged accordingly and must include brief notes detailing the problem within the provided comments field. Included in this file are also the most recent CEDEN comparable station name and code list as well as the applicable project CEDEN codes for retrieving data from the CEDEN website once data arrive there.

IV. Groundwater Quality Monitoring Requirements

The groundwater quality monitoring requirements in this MRP have been developed in consideration of the critical questions developed by the Groundwater Monitoring Advisory Workgroup (questions are presented in the Information Sheet, Attachment A). The third-party must collect sufficient data to describe irrigated agricultural impacts on groundwater quality and to determine whether existing or newly implemented management practices comply with the groundwater limitations of the Order.

A. Groundwater Vulnerability Designations

The third-party and staff of the Central Valley Water Board will evaluate available information pertaining to discharges of waste from irrigated lands to groundwater pursuant to the procedures set forth in section IV.B below. As a default this Order defines high vulnerable areas within the Tulare Lake Basin Area as those areas that have been identified by the State Water Board Hydrogeologically Vulnerable Areas, areas covered by the California Department of Pesticide Regulation groundwater protection program, and areas identified by the board with exceedances of water quality objectives for which irrigated agriculture waste discharges may cause, or contribute to the exeedance. The third-party may elect to recommend refinements or changes to this definition during the development of the Groundwater Assessment Report (GAR). These vulnerability designations will be made by the third-party and staff of the Central Valley Water Board using a combination of physical properties (soil, type, depth to groundwater, known agricultural impacts to beneficial uses, etc.) and management practices (irrigation method, crop type, nutrient application

and removal rates, etc.). The refinement process is not static but dynamic; groundwater vulnerability designations will continue to be updated and refined periodically as conditions warrant.

The resulting Groundwater Assessment Report (GAR) groundwater vulnerability designations will provide the basis for the development of the Trend and Representative Groundwater Monitoring programs to be implemented under the Groundwater Monitoring Strategy.

Vulnerability designations for groundwater are required by this MRP as part of the Groundwater Assessment Report identified in section IV.B below. Vulnerability designations may be refined/ updated periodically during the Monitoring Report process. The Executive Officer will make the final determination regarding vulnerability designations.

High vulnerability areas - 1) do meet the requirements for the preparation of a Groundwater Quality Management Plan (see WDRs VIII.I.2; GQMP: 1,2, or 4) or 2) information provided in the Groundwater Assessment Report indicates irrigated lands could cause or contribute to an exceedance of water quality objectives or degradation of groundwater quality that may threaten applicable beneficial uses.

Low vulnerability areas – are not high vulnerability areas as described above.

Prioritization of high vulnerability areas: The third party may also prioritize the areas designated as high vulnerability areas for purposes of preparing trend and representative groundwater monitoring programs. When establishing relative priorities for high vulnerability areas, the third party shall consider the following:

- Identified exceedances of water quality objectives for which irrigated agriculture waste discharges are the cause, or a contributing source;
- The proximity of the high vulnerability area to areas contributing recharge to urban and rural communities where groundwater serves as a significant source of supply;
- Existing field or operational practices identified to be associated with irrigated agriculture waste discharges that are the cause, or a contributing source; and
- The largest acreage commodity types comprising up to at least 80% of the irrigated agricultural acreage in the high vulnerability areas and the irrigation and fertilization practices employed by these commodities.

B. Groundwater Assessment Report

The purpose of the Groundwater Assessment Report (GAR) is to provide the technical basis informing the scope and level of effort for implementation of the Groundwater Monitoring Strategy described in section IV.C below. The three main objectives of the GAR are to:

- Identify where irrigated agricultural operations may cause or contribute to known groundwater quality impacts or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities (high vulnerability areas),[6]
- Produce a prioritization of high vulnerability areas, and
- Evaluate the merit and feasibility of incorporating existing groundwater data collection efforts and their corresponding monitoring well systems to achieve the objectives of this Order and support its groundwater monitoring requirements.

[6] The third-party must consider the Department of Pesticide Regulation groundwater protection areas and the State Water Board hydrogeological vulnerability areas when designating high vulnerability areas. If a DPR or State Water Board vulnerability area is not identified as a "high vulnerability" area in the GAR, the third-party must provide sufficient evidence, including relevant water quality data, to justify that area's reclassification as "low vulnerability."

The GAR information will provide the basis for the development of the Trend and Representative Groundwater Monitoring programs to be implemented under the Groundwater Monitoring Strategy. Three (3) months after receiving an NOA from the Central Valley Water Board, the third-party will provide a proposed outline of the GAR to the Executive Officer that describes data sources and references that will be considered in developing the GAR. The GAR is due one (1) year after third-party receipt of an NOA from the board.

The GAR shall include, at a minimum, the following data components:

- Detailed land use information with emphasis on land uses associated with irrigated agricultural operations. The information shall identify the largest acreage commodity types in the third-party area, including the most prevalent commodities comprising up to at least 80% of the irrigated agricultural acreage in the third-party area.
- Information regarding depth to groundwater, provided as a contour map(s).
- Groundwater recharge information, including identification of areas contributing recharge to urban and rural communities where groundwater serves as a significant source of supply
- Soil survey information, including significant areas of high salinity, alkalinity and acidity
- Shallow groundwater constituent concentrations (potential constituents of concern include any material applied as part of the agricultural operation, including constituents in irrigation supply water [e.g., pesticides, fertilizers, soil amendments, etc.] that could impact beneficial uses or cause degradation).
- Information on existing groundwater data collection and analysis efforts relevant to this Order (e.g., Department of Pesticide Regulation [DPR] United States Geological Survey [USGS] State Water Board Groundwater Ambient Monitoring and Assessment [GAMA], California Department of Public Health, local groundwater management plans, etc.). This groundwater data compilation and review shall include readily accessible information relative to the Order on existing monitoring well networks, individual well details, and monitored parameters. For existing monitoring networks (or portions thereof) and/or relevant data sets, the third-party should assess the possibility of data sharing between the data-collecting entity, the third-party, and the Central Valley Water Board.

To develop the above data components, the GAR shall review existing federal, state, county, and local databases and documents, as appropriate.

The GAR shall discuss pertinent geologic and hydrogeologic information for the third-party area(s) and utilize GIS mapping applications, graphics, and tables, as appropriate, in order to clearly convey pertinent data, support data analysis, and show results.

The GAR shall evaluate the above data components to:

- Determine where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities (high vulnerability areas). It shall also provide the rationale for proposed vulnerability determinations.
- Determine the merit and feasibility of incorporating existing groundwater data collection efforts, and their corresponding monitoring well systems for obtaining appropriate groundwater quality information to achieve the objectives of and support groundwater monitoring activities under this Order. This shall include specific findings and conclusions and provide the rationale for conclusions.
- Prepare a ranking of high vulnerability areas for staged implementation of the Groundwater Monitoring Strategy described below.

Additional information such as models, studies, and information collected as part of this Order may also be considered in designating and prioritizing vulnerability areas for groundwater. The Executive Officer will review and may approve or require changes to any third-party proposed vulnerability areas and the proposed priority ranking. The vulnerability areas, or any changes thereto, shall not be effective until third-party receipt of written approval by the Executive Officer.

C. Groundwater Monitoring Strategy

The strategy for groundwater monitoring consists of two parallel tracks; 1) a Trend Monitoring Program and 2) a Representative Monitoring Program. Each of these two groundwater monitoring programs has its own specific objectives, and the design of the associated monitoring networks will differ in accordance with the specific objectives to be reached. While it is anticipated that these two groundwater monitoring programs will provide sufficient groundwater data to evaluate whether management practices of irrigated agriculture are protective of groundwater quality, the Executive Officer may also, pursuant to Water Code section 13267, order Members to perform groundwater monitoring. Such an order may occur, for instance, if violations of the Order are documented or the irrigated agricultural operation is found to be a significant threat to groundwater quality.

1. Trend Groundwater Monitoring Program

a. Objectives - The objectives of the Trend Groundwater Monitoring Program are (1) to determine baseline quality of groundwater relevant to irrigated agriculture, and (2) to develop long-term groundwater quality information that can be used to evaluate the regional effects (i.e., not site-specific effects) of irrigated agriculture and its practices.

b. Implementation - To reach the stated objectives for the Trend Groundwater Monitoring Program, the third party shall develop a groundwater monitoring network that will (1) be implemented over both high and low vulnerability areas in the third-party area; and will (2) employ shallow wells, but not necessarily wells completed in the uppermost zone of first encountered groundwater. The use of existing wells is less costly than installing wells specifically designed for groundwater monitoring, while still yielding data which can be compared with historical and future data to evaluate long-term groundwater trends. The third party may also consider using existing monitoring networks such as those used by AB 3030 and SB 1938 plans.

   The third-party shall submit a proposed Trend Groundwater Monitoring Workplan described in section IV.D.1 below to the Central Valley Water Board. The proposed network shall consist of a sufficient number of wells to provide coverage in the third-party geographic area so that baseline conditions and composite regional effects of irrigated agriculture can be assessed according to the Trend monitoring objectives. The rationale for the distribution of Trend monitoring wells shall be included in the workplan. A required workplan for conducting trend monitoring within the third-party's boundaries is detailed in section IV.D.1 below.

c. Reporting - The results of the trend monitoring are to be included in the third-party's Monitoring Report and shall include a map of the sampled wells, tabulation of the analytical data, and time concentration charts. Groundwater monitoring data are to be submitted electronically to the State Water Board's GeoTracker Database and to the Central Valley Water Board.

   Following collection of sufficient data (sufficiency to be determined by the method of analysis proposed by the third-party) from each well, the third-party is to evaluate the data for trends. The methods to be used to evaluate trends shall be proposed by the third-party in the Trend Groundwater Monitoring Workplan described in section IV.D.1 below.

2. Representative Groundwater Monitoring Program

A Representative Groundwater Monitoring Program (RGMP) is required where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities (high vulnerability areas). The objective of the RGMP is to identify whether existing site-specific and/or commodity-specific management practices are protective of groundwater quality and whether that determination is affected by site conditions in the high vulnerability areas. A second objective of the RGMP is to assess whether, and to what extent, any newly implemented management practices are improving groundwater quality. Given the wide range of management practices/commodities that are used within the third-party's boundaries, it is anticipated that the third-party will rank or prioritize its high vulnerability areas and commodities, and present a phased approach to implement the RGMP.

a. Implementation - The RGMP requires monitoring of wells completed into first encountered groundwater. Monitoring of first encountered groundwater is important because it more readily allows identification of the area from which water entering a well originates than deeper wells and allows identification of changes in groundwater quality from activities on the surface at the earliest possible time. Representative monitoring may be conducted by watershed or commodity groups within an area with known groundwater impacts or vulnerability, or by watershed or commodity groups that wish to determine the effects of regional or commodity driven management practices. As such, representative monitoring may transcend watershed or third-party boundaries, involving participants in other areas or third-party groups, provided the monitoring is conducted in a manner representative of areas to which it will be applied. A master schedule describing the rank or priority for the investigation(s) of the high vulnerability areas (or commodities within these areas) to be examined under the RGMP shall be prepared and submitted to the Executive Officer as detailed in the Representative Groundwater Monitoring Workplan section IV.D.2 below.

b. Report - Reports of the RGMP may be submitted to the Executive Officer as part of the third-party's Monitoring Report or in a separate report due on the same date as the Monitoring Report. The report shall include all data (including analytical reports) collected by each phase of the RGMP since the previous report was submitted. The report shall also contain a tabulated summary of data collected to date by the Representative Groundwater Monitoring Program. The report shall summarize the monitoring activities conducted under the RGMP, and identify the number and location of installed monitoring wells and other types of monitoring devices. Within each report, the third-party shall evaluate the groundwater monitoring data and make a determination whether groundwater is being impacted by activities at farms being monitored by the RGMP. If the management practices being implemented at a monitored farm are found not to be protective of groundwater quality, the Executive Officer may issue an order to the owner/operator of the monitored farm to identify and implement management practices that are protective of groundwater quality prior to submittal of the Summary Representative Monitoring Report (SRMR) described below.

   Each report shall also include an evaluation of whether the specific phase(s) of the Representative Groundwater Monitoring Program is/are on schedule to provide the data needed to complete the SRMR (detailed below) by the required deadline. If the evaluation concludes that information needed to complete the SRMR may not be available by the required deadline, the report shall include measures that will be taken to bring the program back on schedule.

c. Summary Representative Monitoring Report - No later than six (6) years after implementation of each phase of the RGMP, the third-party shall submit a Summary Representative Monitoring

Report (SRMR) identifying management practices that are protective of groundwater quality for the range of conditions found at farms covered by that phase of the study. The identification of management practices for the range of conditions must be of sufficient specificity to allow Members of the third-party and staff of the Central Valley Water Board to identify which practices at monitored farms are appropriate for farms with the same or similar range of site conditions, and generally where such farms may be located within the third-party area (e.g., the summary report may need to include maps of the third-party that identify the types of management practices that should be implemented in certain areas based on specified site conditions). The summary report must include an adequate technical justification for the conclusions that incorporates available data and reasonable interpretations of geologic and engineering principles to identify management practices protective of groundwater quality.

The report shall include an assessment of whether monitored farms are implementing management practices that are protective of groundwater quality. If monitoring concludes that management practices currently in use are not protective of groundwater quality based upon information contained in the SRMR, and therefore are not confirmed to be sufficient to ensure compliance with the groundwater limitations of the Order, the third-party in conjunction with commodity groups and/or other experts (e.g., University of California Cooperative Extension, Natural Resources Conservation Service) shall propose and implement new/alternative management practices to be subsequently evaluated at monitored farms. Where applicable, existing GQMPs shall be updated by the third-party group to be consistent with completed SRMRs.

D. Groundwater Monitoring Workplans

The third-party shall develop and submit workplans for conducting Trend and Representative Groundwater Monitoring to the Executive Officer for approval. These workplans shall be submitted within two (2) years of third-party receipt of a NOA from the board. Required workplan elements are presented in the sections below.

1. Trend Monitoring Workplan

The third-party shall develop a workplan for conducting trend monitoring within its boundaries that meets the objectives and minimum requirements described in section IV.C.1. The Trend Monitoring Workplan shall also provide information/details regarding the following topics:

a. A discussion of the rationale for the number of proposed wells to be monitored and their locations. The rationale needs to consider: 1) the variety of agricultural commodities produced within the third-party's boundaries (particularly those commodities comprising the most irrigated agricultural acreage), 2) the conditions discussed/identified in the GAR related to the vulnerability prioritization within the third-party area, and 3) the areas identified in the GAR as contributing significant recharge to urban and rural communities where groundwater serves as a significant source of supply.

b. Well details for wells proposed for trend monitoring, including:
   i. GPS coordinates;
   ii. Physical address of the property on which the well is situated (if available);
   iii. California State well number (if known);
   iv. Well depth;
   v. Top and bottom perforation depths;
   vi. A copy of the water well drillers log, if available;
   vii. Depth of standing water (static water level), if available (this may be obtained after implementing the program); and

viii. Well seal information (type of material, length of seal).

c. Proposed sampling schedule: Trend monitoring wells will be sampled annually at the same time of the year for the indicator parameters identified in Table 3 below.

d. Proposed method(s) to be used to evaluate trends in the groundwater monitoring data over time.

Table 3: Trend Monitoring Constituents

Annual Monitoring Conductivity (at 25 °C)* pH* Dissolved oxygen (DO)* Temperature* Nitrate + nitrite as nitrogen Total kjeldahl nitrogen * field parameters
Trend monitoring wells are also to be sampled initially and once every five years thereafter for the following COCs: Total dissolved solids (TDS) General minerals: Anions (carbonate, bicarbonate, chloride, and sulfate) Cations (boron, calcium, sodium, magnesium, and potassium)

2. Representative Groundwater Monitoring Workplan

The third-party either solely or in conjunction with a Representative Monitoring Group[7] (watershed or commodity based) shall prepare either a Representative Groundwater Monitoring Workplan(s) that proposes a reasonable number of monitoring locations situated throughout the high vulnerability area(s), and encompassing the range of management practices used, the major agricultural commodities, and site conditions under which these commodities are grown, or a scientifically sound alternative to groundwater monitoring that will provide equivalent information. Any alternative to groundwater monitoring, such as modeling or vadose zone sampling, must be proposed by the third-party and approved by the Executive Officer in order to be included within the Representative Groundwater Monitoring Workplan. Any proposed alternative must ensure that the objectives of the Representative Groundwater Monitoring program are accomplished and sufficient groundwater monitoring is collected or available to confirm or validate the effectiveness of the alternative method(s). For any method proposed as an alternative to groundwater monitoring, sufficient data must be collected to confirm that the method can accurately predict the concentrations of COCs in first-encountered groundwater.

The workplan shall be designed to meet the objectives and minimum requirements described in section IV.C.2. If the third-party chooses to rank or prioritize its high vulnerability areas in its GAR, a single Representative Groundwater Monitoring Workplan may be prepared which includes a timeline describing the priority and schedule for each of the areas/commodities to be investigated and the submittal dates for addendums proposing the details of each area's investigation.

[7] A Representative Monitoring Group refers to an entity that may be formed or collaborated with to develop and carry out representative groundwater monitoring (e.g., commodity groups).

The proposed Representative Groundwater Monitoring Workplan must identify the constituents to be monitored and the frequency of monitoring for each constituent. The proposed constituents shall be selected based upon the information collected from the GAR and must be sufficient to identify if the management practices being monitored are protective of groundwater quality. At a minimum, the baseline constituents to be monitored under Representative Groundwater Monitoring must include those parameters required under Trend Monitoring.

The proposed Representative Groundwater Monitoring Workplan shall contain sufficient information/justification for the Executive Officer to evaluate the ability of the monitoring program to identify whether existing management practices in combination with site conditions, are protective of groundwater quality. The workplan must explain how data collected at monitored farms will be used to assess impacts to groundwater at represented farms that are not part of the Representative Groundwater Monitoring Program's monitoring network. This information is needed to demonstrate whether data collected from the monitoring network will allow identification of management practices that are protective of water quality at Member farms represented by the third-party, including represented farms from which on-site data are not collected.

Upon approval of the Representative Groundwater Monitoring Workplan, the third-party shall prepare and submit a Representative Groundwater Monitoring Workplan Monitoring Well Installation and Sampling Plan (MWISP). A description of the MWISP and its required elements/submittals are presented as Appendix MRP-2. The MWISP must be approved by the Executive Officer prior to the installation of the MWISP's associated monitoring wells.

V. Third-Party Reporting Requirements

Reports and notices shall be submitted in accordance with section IX of the Order, Reporting Provisions.

A. Quarterly Submittals of Surface Water Monitoring Results

Each quarter, the third-party shall submit the previous quarter's surface water monitoring results in an electronic format. The deadlines for these submittals are listed in Table 4 below.

Table 4. Quarterly Surface Water Monitoring Data Reporting Schedule

Due Date	Type	Reporting Period
1 March	Quarterly Monitoring Data Report	1 July through 30 September of previous calendar year
1 June	Quarterly Monitoring Data Report	1 October through 31 December of previous calendar year
1 September	Quarterly Monitoring Data Report	1 January through 31 March of same calendar year
1 December	Quarterly Monitoring Data Report	1 April through 30 June of same calendar year

Exceptions to due dates for submittal of electronic data may be granted by the Executive Officer if good cause is shown. The Quarterly Surface Water Monitoring Data Report shall include the following for the required reporting period:

1. An Excel workbook containing an export of all data records uploaded and/or entered into the CEDEN comparable database (surface water data). The workbook shall contain, at a minimum, those items detailed in the QAPP Guidelines.
2. The most current version of the third-party's eQAPP.

3. Electronic copies of all field sheets.
4. Electronic copies of photos obtained from all surface water monitoring sites, clearly labeled with the CEDEN comparable station code and date.
5. Electronic copies of all applicable laboratory analytical reports on a CD.
6. For toxicity reports, all laboratory raw data must be included in the analytical report (including data for failed tests), as well as copies of all original bench sheets showing the results of individual replicates, such that all calculations and statistics can be reconstructed. The toxicity analyses data submittals must include individual sample results, negative control summary results, and replicate results. The minimum in-test water quality measurements reported must include the minimum and maximum measured values for specific conductivity, pH, ammonia, temperature, and dissolved oxygen.
7. For chemistry data, analytical reports must include, at a minimum, the following:
   a. A lab narrative describing QC failures,
   b. Analytical problems and anomalous occurrences,
   c. Chain of custody (COCs) and sample receipt documentation,
   d. All sample results for contract and subcontract laboratories with units, RLs and MDLs,
   e. Sample preparation, extraction and analysis dates, and
   f. Results for all QC samples including all field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, and surrogate recoveries.

Laboratory raw data such as chromatograms, spectra, summaries of initial and continuing calibrations, sample injection or sequence logs, prep sheets, etc., are not required for submittal, but must be retained by the laboratory in accordance with the requirements of section X. of the Order, Record-keeping Requirements.

If any data are missing from the quarterly report, the submittal must include a description of what data are missing and when they will be submitted to the Central Valley Water Board. If data are not loaded into the CEDEN comparable database, this shall also be noted with the submittal.

B. Annual Groundwater Monitoring Results

Annually, by 1 May, the third-party shall submit the prior year's groundwater monitoring results as an Excel workbook containing an export of all data records uploaded and/or entered into the State Water Board GeoTracker database. If any data are missing from the report, the submittal must include a description of what data are missing and when they will be submitted to the Central Valley Water Board. If data are not loaded into the GeoTracker database, this shall also be noted with the submittal.

C. Monitoring Report

The Monitoring Report shall be submitted by 1 May every two (2) years, with the first report due 1 May 2014. The report shall cover the monitoring periods from the previous two hydrologic water years. A hydrologic water year is defined as 1 October through 30 September. The report shall include the following components:

1. Signed transmittal letter;
2. Title page;
3. Table of contents;
4. Executive summary;
5. Description of the third-party geographical area;
6. Monitoring objectives and design;
7. Sampling site/monitoring well descriptions and rainfall records for the time period covered under the Monitoring Report;

8. Location map(s) of sampling sites/monitoring wells, crops and land uses;
9. Tabulated results of all analyses arranged in tabular form so that the required information is readily discernible;
10. Discussion of data relative to water quality objectives, and water quality management plan milestones, where applicable;
11. Sampling and analytical methods used;
12. Summary of Quality Assurance Evaluation results (as identified in the QAPP Guidelines for Precision, Accuracy and Completeness);
13. Specification of the method(s) used to obtain estimated flow at each surface water monitoring site during each monitoring event;
14. Summary of exceedances of water quality objectives/trigger limits occurring during the reporting period and for surface water related pesticide use information;
15. Actions taken to address water quality exceedances that have occurred, including but not limited to, revised or additional management practices implemented;
16. Evaluation of monitoring data to identify spatial trends and patterns;
17. Summary of Annual Nitrogen Budgets submitted to the third-party, including confirmation of budget development for those Members that are subject to such requirements;
18. Summary of management practice information collected as part of Farm Evaluations;
19. Summary of mitigation monitoring;
20. Summary of education and outreach activities; and
21. Conclusions and recommendations.

Additional requirements and clarifications necessary for the above report components are described below.

Report Component (1) —Signed Transmittal Letter

A transmittal letter shall accompany each report. The transmittal letter shall be submitted and signed in accordance with the requirements of section IX of the Order, Reporting Provisions.

Report Component (8) — Location Maps

Location map(s) showing the sampling sites/monitoring wells, crops, and land uses within the third party's geographic area must be updated (based on available sources of information) and included in the Monitoring Report. An accompanying GIS shapefile or geodatabase of monitoring site and monitoring well information must include the CEDEN comparable site code and name (surface water only) and Global Positioning System (GPS) coordinates (surface water sites and wells used for monitoring). The map(s) must contain a level of detail that ensures they are informative and useful. GPS coordinates must be provided as latitude and longitude in the decimal degree coordinate system (at a minimum of five decimal places). The datum must be either WGS 1984 or NAD83, and clearly identified on the map. The source and date of all data layers must be identified on the map(s). All data layers/shapefiles/geodatabases included in the map shall be submitted with the Monitoring Report.

Report Component (9) – Tabulated Results

In reporting monitoring data, the third-party shall arrange the data in tabular form so that the required information is readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with the data collection requirements of the MRP.

Report Component (10) — Data Discussion to Illustrate Compliance

The report shall include a discussion of the third-party's compliance with the data collection requirements of the MRP. If a required component was not met, an explanation for the missing data must be included. Results must also be compared to water quality objectives and trigger limits.

Report Component (12) — Quality Assurance Evaluation (Precision, Accuracy and Completeness)

A summary of precision and accuracy results (both laboratory and field) is required in the report. The required data quality objectives are identified in the QAPP Guidelines; acceptance criteria for all measurements of precision and accuracy must be identified. The third-party must review all QA/QC results to verify that protocols were followed and identify any results that did not meet acceptance criteria. A summary table or narrative description of all QA/QC results that did not meet objectives must be included. Additionally, the report must include a discussion of how the failed QA/QC results affect the validity of the reported data. The corrective actions to be implemented are described in the QAPP Guidelines.

In addition to precision and accuracy, the third-party must also calculate and report completeness. Completeness includes the percentage of all quality control results that meet acceptance criteria, as well as a determination of project completeness. For further explanation of this requirement, refer to the QAPP Guidelines. The third-party may ask the laboratory to provide assistance with evaluation of their QA/QC data, provided that the third-party prepares the summary table or narrative description of the results for the Monitoring Report.

Report Component (14) — Summary of Exceedances

A summary of the exceedances of water quality objectives or triggers that have occurred during the monitoring period is required in the Monitoring Report. In the event of exceedances for pesticides or toxicity in surface water, pesticide use data must be included in the Monitoring Report. Pesticide use information may be acquired from the agricultural commissioner. This requirement is described further in the following section on Exceedance Reports.

Report Component (16) — Evaluation of Monitoring Data

The third-party must evaluate its monitoring data in the Monitoring Report in order to identify potential trends and patterns in surface and groundwater quality that may be associated with waste discharge from irrigated lands. As part of this evaluation, the third-party must analyze all readily available monitoring data that meet program quality assurance requirements to determine deficiencies in monitoring for discharges from irrigated agricultural lands and whether additional sampling locations are needed. If deficiencies are identified, the third-party must propose a schedule for additional monitoring or source studies. Upon notification from the Executive Officer, the third-party must monitor any parameter in a watershed that lacks sufficient monitoring data (i.e., a data gap should be filled to assess irrigated agriculture's effects on water quality).

The third-party should incorporate pesticide use information, as needed, to assist in its data evaluation. Wherever possible, the third-party should utilize tables or graphs that illustrate and summarize the data evaluation.

Report Component (17) – Summary of Annual Nitrogen Budgets

The third-party shall aggregate information from Members' Annual Nitrogen Budget Worksheets to characterize the input, uptake, and loss of nitrogen fertilizer applications by specific crops in the Tulare Lake Basin Area. The third-party's assessment of the nitrogen budget information should include, at a minimum, comparisons of farms with the same crops, similar soil conditions, and similar practices (e.g., irrigation management). This information will include a summary of nitrogen consumption ratios by crop or other equivalent reporting units. The third-party will also provide the data used to develop this summary in an electronic format, compatible with ArcGIS, identified to at least the section (TRS) level. The ratio is an estimate of anticipated crop consumption in comparison to total applied nitrogen through sources including fertilizers, manures, composts, nitrates in irrigation supply water and other sources.

Report Component (18) – Summary of Management Practice Information
The third-party will aggregate and summarize information collected from Farm Evaluations. The third party will provide the data used to develop this summary in an electronic format, compatible with ArcGIS, identified to at least the section (TRS) level.

Report Component (19) – Mitigation Monitoring
As part of the Monitoring Report, the third-party shall report on the CEQA mitigation measures reported by Members to meet the provisions of the Order and any mitigation measures the third-party has implemented on behalf of Members. The third-party is not responsible for submitting information that Dischargers do not send them directly by the 1 March deadline (see section VII.E of the Order for individual Discharger mitigation monitoring requirements). The Mitigation Monitoring Report shall include information on the implementation of CEQA mitigation measures (mitigation measures are described in Attachment C of the Order), including the measure implemented, identified potential impact the measure addressed, location of the mitigation measure (township, range, section), and any steps taken to monitor the ongoing success of the measure.

D. Surface Water Exceedance Reports

The third-party shall provide surface water exceedance reports if monitoring results show exceedances of adopted numeric water quality objectives or trigger limits, which are based on interpretations of narrative water quality objectives. For each surface water quality objective exceeded at a monitoring location, the third-party shall submit an Exceedance Report to the Central Valley Water Board. The estimated flow at the monitoring location and photographs of the site must be submitted in addition to the exceedance report but do not need to be submitted more than once. The third-party shall evaluate all of its monitoring data and determine exceedances no later than five (5) business days after receiving the laboratory analytical reports for an event. Upon determining an exceedance, the third-party shall send the Exceedance Report by email to the third-party's designated Central Valley Water Board staff contact by the next business day. The Exceedance Report shall describe the exceedance, the follow-up monitoring, and analysis or other actions the third-party may take to address the exceedance. Upon request, the third-party shall also notify the agricultural commissioner of the county in which the exceedance occurred and/or the director of the Department of Pesticide Regulation.

Surface water exceedances of pesticides or toxicity: When any pesticide or toxicity exceedance is identified at a location that is not under an approved management plan for toxicity or pesticides, follow-up actions must include an investigation of pesticide use within the location's watershed area. For toxicity exceedances, the investigation must include all pesticides applied within the area that drains to the monitoring site during the four weeks immediately prior to the exceedance date. The pesticide use information may be acquired from the agricultural commissioner, or from information received from Members within the same drainage area. Results of the pesticide use investigation must be summarized and discussed in the Monitoring Report.

VI. Water Quality Triggers for Development of Management Plans

This Order requires that Members comply with all adopted water quality objectives and established federal water quality criteria applicable to their discharges. The *Water Quality Control Plan for the Tulare Lake Basin* (Basin Plan) contains numeric and narrative water quality objectives applicable to surface water and groundwater within the Order's watershed area. USEPA's 1993 National Toxics Rule (NTR) and 2000 California Toxics Rule (CTR) contain water quality criteria which, when combined with Basin Plan beneficial use designations constitute numeric water quality standards. Table 5 of this MRP lists Basin Plan numeric water quality objectives and NTR/CTR criteria for constituents of concern that may be discharged by Members.

Table 5 does not include water quality criteria that may be used to interpret narrative water quality objectives, which shall be considered trigger limits. Trigger limits will be developed by the Central Valley Water Board staff through a process involving coordination with the Department of Pesticide Regulation (for pesticides) and stakeholder input. The trigger limits will be designed to implement narrative Basin Plan objectives and to protect applicable beneficial uses. The Executive Officer will make a final determination as to the appropriate trigger limits. Any trigger limits proposed by the third-party or determination of appropriate trigger limits by the Executive Officer must be consistent with applicable Basin Plan policies governing the interpretation of narrative water quality objectives.

VII. Quality Assurance Project Plan (QAPP)

The third-party must develop and/or maintain a QAPP that includes watershed and site-specific information, project organization and responsibilities, and the quality assurance components in the QAPP Guidelines. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the California Department of Public Health (DPH), except where the DPH has not developed a certification program for the material to be analyzed.

The Southern San Joaquin Valley Water Quality Coalition's existing QAPP has not been approved by the Central Valley Water Board's Quality Assurance Officer. Any necessary modifications to the QAPP for surface and groundwater monitoring shall be submitted prior to submittal of the surface water monitoring work plan and the groundwater trend and representative monitoring workplans. Any proposed modifications to the approved QAPP must receive Executive Officer approval prior to implementation.

The Central Valley Water Board may conduct an audit of the third-party's contracted laboratories at any time in order to evaluate compliance with the QAPP Guidelines. Quality control requirements are applicable to all of the constituents listed in QAPP Guidelines, as well as any additional constituents that are analyzed or measured, as described in the appropriate method. Acceptable methods for laboratory and field procedures as well as quantification limits are described in the QAPP Guidelines.

Table 5 Basin Plan Numeric Water Quality Objectives for the Tulare Lake Basin Area

Table 5 is currently being compiled